

division multiplex signal and said optical clock signal.

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3. An optical time-division multiplex signal processing apparatus as claimed in claim 2, wherein said dispersion medium is selected from any of a
10 single-mode optical fiber, a diffraction grating and a prism.

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4. An optical time-division multiplex signal processing apparatus as claimed in claim 2, wherein said optical coupler includes a depolarization element at said second input end.

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5. An optical time-division multiplex signal
25 processing apparatus as claimed in claim 2, wherein said optical dispersion part comprises a first dispersion medium supplied with said optical time-division multiplex signal, a second dispersion medium supplied with said optical clock signal, and an
30 optical coupler coupling said optical time-division multiplex signal passed through said first dispersion medium and said optical clock signal passed through said second dispersion medium.

35

6. A processing method of an optical time-division multiplex signal, comprising the steps of:
providing a chirp to each of an optical
time-division multiplex signal and an optical clock
5 signal; and

detecting a beat component formed between
said optical time-division multiplex signal and said
optical signal provided with respective chirp.

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7. An optical time-division multiplex signal
receiver, comprising:

15 an optical dispersion part supplied with an
optical time-division multiplex signal and an optical
clock signal, said optical dispersion part providing a
chirp to each of said optical time-division multiplex
signal and said optical clock signal;

20 an optical detector coupled optically to
said optical dispersion part, said optical detector
receiving said optical time-division multiplex signal
and said optical clock signal in a superposed state;

25 a filter connected to an output terminal of
said optical detector, said filter filtering out an
electric signal of a desired frequency band from an
output electric signal of said optical detector; and

an envelop detector supplied with an output
signal of said filter.

30

8. An optical time-division multiplex
35 receiver, comprising:

a first optical dispersion part supplied
with an optical time-division multiplex signal and

causing an optical dispersion therein;

a second optical dispersion part supplied with an optical clock signal and causing an optical dispersion therein;

5 a plurality of optical detectors each coupled optically to said first and second optical dispersion parts, each of said optical detectors receiving said optical time-division multiplex signal and said optical clock signal in a superposed state;

10 a plurality of band-pass filters each provided in correspondence to one of said plurality of optical detectors, each of said band-pass filters filtering out an output signal of said optical detector corresponding thereto; and

15 a plurality of envelop detectors each provided in correspondence to one of said plurality of band-pass filters,

wherein said plurality of band-pass filters have mutually different band-pass characteristics.

20

9. An optical-time division multiplex signal
25 receiver as claimed in claim 8, wherein each of said plurality of band-pass filters has a pass-band tuned to a frequency of a beat component formed between an optical signal component included in said time-division multiplex optical signal and said optical
30 clock signal.

35 10. An optical time-division multiplex receiver, comprising:
a first optical dispersion part supplied

with an optical time-division multiplex signal and providing an optical dispersion thereto;

5 a second optical dispersion part supplied with an optical clock signal and providing an optical dispersion thereto;

10 a plurality of optical delay elements each coupled to said second optical dispersion part, each of said plurality of optical delay elements inducing a delay in an optical clock signal supplied thereto from said second optical dispersion part;

15 a plurality of optical detectors each coupled optically to said first optical dispersion part and further to one of said plurality of optical delay elements, each of said optical detectors detecting said optical time-division multiplex signal from said first dispersion part and said optical clock signal from said optical delay element;

20 a plurality of band-pass filters each supplied with an output signal of one of said plurality of optical detectors corresponding thereto; and

25 a plurality of envelop detectors each supplied with an output signal of one of said plurality of band-pass filters corresponding thereto.

30 11. An optical time-division multiplex signal receiver as claimed in claim 10, wherein said band-pass filters have a substantially identical pass-band.

35

12. An optical time-division multiplex

signal receiver as claimed in claim 11, wherein said plurality of optical delay elements are provided in correspondence to a plurality of channels in said optical time-division multiplex signal, and wherein
5 each of said optical delay elements has a delay time set so as to form a beat signal between an optical signal of a corresponding channel and said clock signal with a frequency corresponding to said pass-band.

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